# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/043,591 | 01/09/2002 | Earl Vickers | 21521-300101 | 6349 |

| 40032 | 7590 | 09/09/2005 |
|---|---|---|

CREATIVE LABS, INC.
LEGAL DEPARTMENT
1901 MCCARTHY BLVD
MILPITAS, CA 95035

| EXAMINER |
|---|
| CHAU, COREY P |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2644 | |

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/043,591 | VICKERS ET AL. |
| | Examiner | Art Unit |
| | Corey P. Chau | 2644 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>09 January 2002</u>.

2a)☐ This action is **FINAL**.          2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance.  See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/09/02</u>

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

# DETAILED ACTION

## Claim Objections

1.      Claim 2 is objected to because of the following informalities:  on line 1, recites "claim 1wherein", should be replaced with "claim 1 wherein".  Appropriate correction is required.

## Claim Rejections - 35 USC § 112

2.      Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3.      The term "substantially" in claim 2 is a relative term which renders the claim indefinite.  The term " substantially " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

## Claim Rejections - 35 USC § 102

4.      The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

> only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.    Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 20040062401 to Davis.

6.    Regarding Claim 1, Davis discloses a method of adjusting the dynamics of an audio track (page 10, paragraph 0107), comprising deriving, from the audio track, a set of metadata describing a statistical distribution of levels encountered in the audio track (page 10, paragraph 0107); deriving, from the metadata, a time-varying gain to modify the statistical distribution of levels (page 10, paragraph 0107); and applying the time-varying gain to the audio track to obtain a resulting audio track (page 10, paragraph 0107).

7.    Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5404315 to Nakano et al. (hereafter as Nakano).

8.    Regarding Claim 1, Nakano discloses a method of adjusting the dynamics of an audio track, comprising:

deriving, from the audio track, a set of metadata describing a statistical distribution of levels encountered in the audio track (column 2, line 57 to column 3, line 4; column 3, lines 23-30);

deriving, from the metadata, a time-varying gain to modify the statistical distribution of levels (Figs. 1, 7-10; column 7, line 61 to column 8, line 2); and

applying the time-varying gain to the audio track to obtain a resulting audio track (Figs. 1, 7-10; column 8, lines 3-6).

9.      Regarding Claim 2, Nakano discloses deriving the time varying gain comprises:

specifying a desired statistical dynamics distribution (Figs. 1, 7-10; column 7,

lines 42-51);

deriving a transfer function from the metadata and from the desired statistical

dynamics distribution (column 6, lines 5-27); and

deriving the time-varying gain from the transfer function such that a final

statistical dynamics distribution encountered in the resulting audio track is substantially

similar to the desired statistical dynamics distribution (column 6, line 5 to column 7, line

37).

10.     Regarding Claim 3, Nakano discloses deriving the time varying gain comprises:

specifying a desired overall loudness for the audio track (Figs. 1, and 7-10;

column 4, line 43 to column 5, line 7);

deriving an estimate of the loudness of the resulting audio track from the

metadata and from an initial estimate of the time-varying gain (Figs. 1, and 7-10; column

4, line 43 to column 5, line 7);

deriving a correction factor from the desired overall loudness and from the

estimate of the loudness of the resulting audio track (Figs. 1, 7-10; column 4, lines 30-

34); and

applying the correction factor to the initial estimate of the time-varying gain to

obtain the time-varying gain (Figs. 1, 7-10; column 4, lines 30-34).

11.     Regarding Claim 4, Nakano discloses deriving the time varying gain comprises:

deriving, from histogram data of levels encountered in the audio track, an original

dynamic spread value representing a spread of the levels encountered in the audio

track (column 7, lines 42-51);

performing a comparison between the original dynamic spread value and a

desired dynamic spread value (column 10, lines 41-59); and

deriving parameters for the derivation of the time-varying gain from the

comparison (column 10, lines 41-59).

12.     Regarding Claim 5, Nakano discloses deriving parameters comprises:

determining a slope of a segment of a compressor transfer function (column 6, line 5 to

column 7, line 37).

13.     Regarding Claim 6, Nakano discloses determining the slope comprises:

applying a test compression scheme to the histogram data to obtain test

histogram data, the test compression scheme including a test slope (Figs. 1, 7-10;

column 7, lines 42-51);

determining a test dynamic spread value from the test histogram data (column 7,

line 42 to column 8, line 60); and

deriving the slope based on a comparison of the original dynamic spread value,

the desired dynamic spread value and the test dynamic spread value (column 6, lines 5-

27).

14.     Regarding Claim 7, Nakano discloses the slope for the compressor transfer

function is determined using interpolation (column 6, line 5-27).

15.     Regarding Claim 8, Nakano discloses the slope for the compressor transfer

function is determined using iteration (column 7, line 42 to column 8, line 60).

16.     Regarding Claim 9, Nakano discloses the original dynamic spread value is derived from a mean absolute deviation from a mean loudness value for the audio track (column 4, line 57 to column 5, line 3).

17.     Regarding Claim 10, Nakano discloses the original dynamic spread value is derived from a mean absolute deviation from a median loudness value for the audio track (column 4, line 57 to column 5, line 3).

18.     Regarding Claim 11, Nakano discloses the parameters include a level of a threshold separating two segments of a compressor transfer function (Figs. 1, 7-10; column 10, lines 41-59).

19.     Regarding Claim 12, Nakano discloses specifying a fraction representing a proportion of the audio track to which compression will be applied (column 6, lines 5-27); deriving from the histogram data a loudness value corresponding to a point above or below which the fraction of the histogram data is located; and using the loudness value as a threshold separating two segments of a compressor transfer function (Figs. 1, 7-10; column 7, line 42 to column 8, line 60; column 10, lines 41-59).

20.     Regarding Claim 13, Nakano discloses deriving a test overall loudness value from the test histogram data; deriving a fixed post-gain value from the test overall loudness value and from a desired loudness value; and applying the time varying gain and the fixed post-gain value to the audio track (Figs. 1, 7-10; column 6, lines 5-27; column 7, line 42 to column 8, line 60).

21.     Regarding Claim 14, Nakano discloses a method of adjusting the loudness of an audio track including a plurality of audio frames, the method comprising:

obtaining loudness values for each of the plurality of audio frames (Figs. 1, 7-10; column 4, line 35 to column 5, line 3);

applying a weighting factor to each of the loudness values to obtain a plurality of weighted loudness values (Figs. 1, 7-10; column 4, lines 30-34);

aggregating the weighted loudness values to obtained an overall loudness value for the audio track (Figs. 1, 7-10);

comparing the overall loudness value to a desired loudness value (column 10, lines 41-59); and

applying a gain to the audio track based on the comparison between the overall loudness value and the desired loudness value (Figs. 1, 7-10).

22.    Regarding Claim 15, Nakano discloses the weighting factor to be applied to a particular loudness value is derived from the particular loudness value itself (column 4, line 35 to column 5, line 14).

23.    Regarding Claim 16, Nakano discloses the weighting factor for a particular loudness value comprises an emphasis parameter raised to a power of the particular loudness value (i.e. non-linear conversion circuit)(Figs. 1, 7-10).

24.    Regarding Claim 17, Nakano discloses the weighted loudness values of the plurality of audio frames are aggregated using a histogram (column 7, line 42 to column 8, line 60).

25.    Regarding Claim 18, Nakano discloses a method of altering a dynamic range of an audio track comprising a plurality of audio frames each having a loudness value, the method comprising:

obtaining original statistical frequency data for the audio track (Figs. 1, 7-10;

column 4, lines 43-56);

applying a test compression scheme to the original statistical frequency data to

obtain test statistical frequency data (column 7, lines 42-51);

deriving from the original statistical frequency data and the test statistical

frequency data an actual compression scheme (column 7, line 42 to column 8, line 60);

and

compressing the audio track using the actual compression scheme (Figs. 1, 7-

10).

26.     Regarding Claim 19, Nakano discloses obtaining a mean loudness deviation

value from the loudness values for the plurality of audio frames; determining a test

mean loudness deviation value from the test statistical frequency data; and comparing

the mean loudness deviation value and the test mean loudness deviation value with a

desired mean loudness deviation value when deriving the actual compression scheme

(Figs. 1, 7-10; column 10, lines 41-59).

27.     Regarding Claim 20, Nakano discloses a method of processing an audio track

comprising:

obtaining statistical frequency data for the audio track (column 4, lines 43-56);

applying a compression scheme to the statistical frequency data to obtain an

estimate of statistical frequency data that would result from applying the compression

scheme directly to the audio track (column 7, lines 42-51);

determining an estimated overall compressed loudness value from the estimate

of statistical frequency data (column 7, line 42 to column 8, line 60);

compressing the audio track using the compression scheme to obtain a

compressed audio track (column 6, lines 5-37); and

applying a gain to the compressed audio track based on a comparison between

the estimated overall compressed loudness value and a desired loudness value

(column 6, line 5 to column 7, line 36).

28.    Regarding Claim 21, Nakano discloses the overall compressed loudness value is

obtained by: obtaining a plurality of individual loudness values from the estimate of

statistical frequency data; applying a weighting factor to each of the individual loudness

values to obtain weighted loudness values; and aggregating the weighted loudness

values to obtained the overall compressed loudness value for the audio track (Figs. 1,

7-10; column 7, line 42 to column 8, lines 63).

## *Conclusion*

29.    Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Corey P. Chau whose telephone number is (571)272-

7514.  The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chin Vivian can be reached on (571)272-7848.  The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system.  Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

September 6, 2005
CPC

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600